FutureGen – A Sequestration and Hydrogen Research Initiative

FutureGen will be the world's first zero emissions power plant that will produce electricity and hydrogen from coal while capturing and storing carbon dioxide. This ten-year effort integrates advanced coal gasification technology, hydrogen from coal, power generation, and carbon dioxide capture and geologic storage.

Goal

The primary goal for FutureGen is to validate the technical feasibility and the economic viability of zero emissions energy from coal and in the process gain broad acceptance of this concept as one solution for future energy and environmental security. The goal will be achieved through the development and/or integrated application of key cutting-edge technologies. The FutureGen project will be supported by the leading U.S. sources of technology and innovation: universities, national laboratories, and industry. The success of FutureGen will assure that coal, a low-cost, abundant, and geographically diverse energy resource, continues to globally supply exceptionally clean energy.

> "Technology offers great promise to significantly reduce greenhouse gas emissions, especially carbon capture, storage, and sequestration technologies."
>
> President George W. Bush
> Announcing the National Climate Change Technology Initiative

The FutureGen project will design, construct and operate a nominal 275 megawatt prototype plant that produces both electricity and hydrogen with zero emissions. The size of the plant is driven by the need for producing technically and commercially relevant data, including the requirement for producing one to two million metric tons per year of CO_2, to adequately validate the integrated operation of the gasification plant and the receiving geologic formation.

Approach

FutureGen is a public-private partnership involving the U.S. Department of Energy (DOE) and a broad, open Alliance of industrial coal producers and electric utilities, as well as state governments and international participants.

The Alliance

DOE signed a cooperative agreement with the FutureGen Industrial Alliance, Inc. to conduct the first phase of the FutureGen project. The FutureGen Industrial Alliance, Inc., formally organized as a Delaware 501(c)(3) non-profit corporation on July 27, 2005, with seven charter members. Since then, five additional companies joined the Alliance bringing the total to twelve companies:

- American Electric Power
- Southern Company
- CONSOL Energy, Inc.
- Rio Tinto Energy America (RTEA)
- Peabody Energy

U.S. Department of Energy
Office of Fossil Energy
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- E.ON U.S.
- PPL Corporation
- BHP Billiton
- Foundation Coal Corp.
- China Huaneng Group
- Anglo American
- Xstrata Coal

The Alliance has an open membership policy to encourage the addition of other coal and utility companies, both domestic and international.

Today, the FutureGen Alliance represents some of the world's largest coal companies and electric utilities. These companies provide energy to tens of millions of residential, business, and industrial customers in Asia, Australia, Canada, Europe, the People's Republic of China, South Africa and the United States, among other regions.

Current Activities

In July 2006, the FutureGen Alliance announced its short list of candidate sites for the FutureGen plant following an extensive technical review. Of the 12 competing sites in seven states, the Alliance concluded that four sites are best suited to host the FutureGen facility. They include: Mattoon, Illinois; Tuscola, Illinois; Heart of Brazos near Jewett, Texas; and Odessa, Texas.

In November 2007, DOE issued its final Environmental Impact Statement (EIS) for the FutureGen project. Release of the EIS is the start of the 30-day waiting period leading to the issuance of the "Record of Decision," the final step towards site selection. In developing the EIS, DOE considered comments received at public meetings that were held in or near the four potential FutureGen sites. Areas of interest discussed ranged from impacts on air quality and water resources to noise issues and impacts on the surrounding community.

In parallel, power plant engineering is proceeding. Towards the end of 2007, following the completion of DOE's National Environmental Policy Act review, the Alliance will select a final site and move toward construction. The plant is expected to be on-line around the 2012 timeframe.

International Participation

The Governments of India and South Korea have signed Framework Protocol agreements to join the United States on the FutureGen project. China, Japan, and Australia have also expressed their intention to join the project. Discussions with other interested countries are ongoing.

For More Information

DOE FutureGen Web site: www.fossil.energy.gov/programs/powersystems/futuregen/

FutureGen Industrial Alliance Web site: www.futuregenalliance.org

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